AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Previously Presented) An ink composition comprising a luminescent compound, a volatile organic solvent, and an energy active compound, and optionally one or more non-luminescent colorants, said energy active compound, when exposed to an effective amount of energy, generates one or more acid species that react to alter a characteristic of the luminescent compound and/or a non-luminescent colorant, wherein the ink composition is an ink jet ink composition.

2. (Previously Presented) An ink composition comprising a colorant, a volatile organic solvent, and an energy active compound, said energy active compound, when exposed to an effective amount of energy, generates one or more acid species that react to alter a characteristic of the colorant, wherein the ink composition is an ink jet ink composition.

3. (Original) The ink composition of claim 2, wherein the colorant is a luminescent colorant.

4. (Original) The ink composition of claim 2, wherein the colorant is a non-luminescent colorant

5. (Original) The ink composition of claim 1, further including a binder resin.

6. (Original) The ink composition of claim 2, further including a binder resin.

7. (Previously Presented) The ink composition of claim 1, wherein the one or more acid species react to alter an absorption characteristic of the luminescent compound.

8. (Previously Presented) The ink composition of claim 1, wherein the one or more acid species react to alter an emission characteristic of the luminescent compound.

9. (Original) The ink composition of claim 8, wherein the emission characteristic is a wavelength of emission.

10. (Original) The ink composition of claim 8, wherein the emission characteristic is an intensity of emission.

11. (Previously Presented) The ink composition of claim 10, wherein the one or more acid species react to decrease the intensity of emission.

12. (Previously Presented) The ink composition of claim 1, which includes one or more non-luminescent colorants, wherein the one or more acid species react to alter an absorption characteristic of a non-luminescent colorant.

13. (Original) The ink composition of claim 12, wherein the absorption characteristic is a wavelength of absorption.

14. (Original) The ink composition of claim 12, wherein the absorption characteristic is an intensity of absorption.

15. (Previously Presented) The ink composition of claim 2, wherein the one or more acid species react to alter an absorption characteristic of the colorant.

16. (Original) The ink composition of claim 15, wherein the absorption characteristic is a wavelength of absorption.

17. (Original) The ink composition of claim 15, wherein the absorption characteristic is an intensity of absorption.

18. (Previously Presented) The ink composition of claim 1, which includes one or more non-luminescent colorants, wherein the one or more acid species react to alter an absorption characteristic of the luminescent compound and an absorption characteristic of a non-luminescent colorant.

19. (Previously Presented) The ink composition of claim 1, which includes one or more non-luminescent colorants, wherein the one or more acid species react to alter an emission characteristic of the luminescent compound and an absorption characteristic of a non-luminescent colorant.

20. (Previously Presented) The ink composition of claim 19, wherein the one or more acid species react to alter the intensity of emission of the luminescent compound.

21. (Previously Presented) The ink composition of claim 19, wherein the one or more acid species react to alter a wavelength of absorption of the non-luminescent colorant.

22. (Previously Presented) The ink composition of claim 19, wherein the one or more acid species react to alter an intensity of absorption of the non-luminescent colorant.

23-24. (Canceled)

25. (Previously Presented) The ink composition of claim 1, wherein the energy active compound is an onium salt.

26. (Original) The ink composition of claim 25, wherein the onium salt comprises an element from Group V, VI, or VII of the periodic table.

27. (Original) The ink composition of claim 25, wherein the onium salt is selected from the group consisting of diazonium salts, iodonium salts having at least one aryl group, sulfonium salts having at least one aryl group, and any combination thereof.

28. (Previously Presented) The ink composition of claim 1, wherein the energy active compound is a thiophenium salt.

29. (Original) The ink composition of claim 28, wherein the thiphenium salt is arylcarbonylalkyl thiophenium salt.

30. (Original) The ink composition of claim 29, wherein the arylcarbonylalkyl thiophenium salt is selected from the group consisting of S-(2-napthalenecarbonylmethyl)-tetrahydrothiophenium p-toluenesulfonate and S-(2-napthalenecarbonylmethyl)-tetrahydrothiophenium trifluoromethanesulfonate.

31. (Previously Presented) The ink composition of claim 1, wherein the energy active compound is selected from the group consisting of diazomethane compounds, triazine derivatives substituted at one or more of 2, 4, and 6 positions of the triazine ring with MX_3 where X is a halogen atom and M is a carbon atom, and any combination thereof.

32. (Original) The ink composition of claim 31, wherein the triazine derivative is tris[trichloromethyl]s-triazine.

33. (Previously Presented) The ink composition of claim 1, wherein the energy active compound comprises a photoabsorbing fragment and a sulfonate, tosylate or triflate group attached thereto.

34. (Original) The ink composition of claim 33, wherein the energy active compound is selected from the group consisting of N-hydroxynaphthalimide triflates, N-hydroxy-5-norbornene-2,3-dicarboximide sulfonates, N-hydroxyphthalimide triflates, naphthalimidyl sulfonates, succinimidyl sulfonates, and benzoin tosylates.

35. (Previously Presented) The ink composition of claim 1, wherein the energy active compound is a halogenated hydrocarbon comprising (1) at least two carbon atoms designated carbons 1 and 2 where carbon 1 and carbon 2 are bound together and at least two halogen atoms are directly bound to a carbon 1 and carbon 2 is directly bound to cyano, hydroxy, fluoride, chloride, bromide, iodide, phosphonate, or sulfonate; or (2) at least three sequentially adjoined carbon atoms designated 1, 2, and 3, wherein at least one halogen atom is bound to carbon 1 and at least one halogen atom is bound to adjacent carbon 2.

36. (Original) The ink composition of claim 35, wherein the energy active compound is selected from the group consisting of 1,2,5,6,9,10-hexabromocyclododecane, 2,2,2-tribromoethanol, 1,2-dibromocyclohexane, 2,3-tribromopropionitrile, benzylbromoacetate, bromoacetic acid, bromoacetyl bromide, 2-bromobutyric acid, 2-bromopropionic acid, 2,3-dibromopropane-1-ol, ethyl bromoacetate, and 1,1,2,2-tetrabromoethane, and any combination thereof.

37-38. (Canceled)

39. (Original) The ink composition of claim 1, wherein the energy is light, heat, electron beam, or any combination thereof.

40. (Original) The ink composition of claim 1, wherein the luminescent compound emits in the ultraviolet (UV) region.

41. (Original) The ink composition of claim 1, wherein the luminescent compound emits in the visible region.

42. (Original) The ink composition of claim 1, wherein the luminescent compound emits in the infrared (IR) region.

43. (Original) The ink composition of claim 3, wherein the luminescent colorant emits in the UV region.

44. (Original) The ink composition of claim 3, wherein the luminescent colorant emits in the visible region.

45. (Original) The ink composition of claim 3, wherein the luminescent colorant emits in the IR region.

46-47. (Canceled)

48. (Previously Presented) The ink composition of claim 1, wherein the volatile organic solvent is selected from the group consisting of alcohols, ketones, cyclic ketones, esters, ethers, and any combination thereof.

49. (Previously Presented) The ink composition of claim 1, wherein the volatile organic solvent is selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, butanol, acetone, methyl ethyl ketone, ethyl acetate, n-propyl acetate, isopropyl acetate, cyclohexanone, and any combination thereof.

50. (Original) The ink composition of claim 5, wherein the binder resin is a thermoplastic resin.

51. (Original) The ink composition of claim 5, wherein the binder resin is selected from the group consisting of amides, urethanes, esters, epoxy resins, ketone resins, vinylpyrrolidone polymers, vinyl polymers, vinylbutyral polymers, acrylics, styrene/acrylics, cellulosics, nitrocellulose, phenolic resins, hydroxystyrene polymers, vinyl alcohol polymers, styrene allyl alcohol polymers, and any combination thereof.

52-53. (Canceled)

54. (Original) The ink composition of claim 2, wherein the energy active compound is an onium salt.

55. (Original) The ink composition of claim 54, wherein the onium salt comprises an element from Group V, VI, or VII of the periodic table.

56. (Original) The ink composition of claim 54, wherein the onium salt is selected from the group consisting of diazonium salts, iodonium salts having at least one aryl group, sulfonium salts having at least one aryl group, and any combination thereof.

57. (Previously Presented) The ink composition of claim 2, wherein the energy active compound is a thiophenium salt.

58. (Original) The ink composition of claim 57, wherein the thiophenium salt is arylcarbonylalkyl thiophenium salt.

59. (Original) The ink composition of claim 58, wherein the arylcarbonylalkyl thiophenium salt is selected from the group consisting of S-(2-napthalenecarbonylmethyl)-

tetrahydrothiophenium p-toluenesulfonate and S-(2-napthalenecarbonylmethyl)-tetrahydrothiophenium trifluoromethanesulfonate.

60. (Previously Presented) The ink composition of claim 2, wherein the energy active compound is selected from the group consisting of diazomethane compounds, triazine derivatives substituted at one or more of 2, 4, and 6 positions of the triazine ring with MX_3 where X is a halogen atom and M is a carbon atom, and any combination thereof.

61. (Original) The ink composition of claim 60, wherein the triazine derivative is tris[trichloromethyl]s-triazine.

62. (Previously Presented) The ink composition of claim 2, wherein the energy active compound comprises a photoabsorbing fragment and a sulfonate, tosylate or triflate group attached thereto.

63. (Original) The ink composition of claim 62, wherein the energy active compound is selected from the group consisting of N-hydroxynaphthalimide triflates, N-hydroxy-5-norbornene-2,3-dicarboximide sulfonates, N-hydroxyphthalimide triflates, naphthalimidyl sulfonates, succinimidyl sulfonates, and benzoin tosylates.

64. (Previously Presented) The ink composition of claim 2, wherein the energy active compound is a halogenated hydrocarbon comprising (1) at least two carbon atoms designated carbons 1 and 2 where carbon 1 and carbon 2 are bound together and at least two halogen atoms are directly bound to a carbon 1 and carbon 2 is directly bound to cyano, hydroxy, fluoride, chloride, bromide, iodide, phosphonate, or sulfonate; or (2) at least three sequentially adjoined carbon atoms designated 1, 2, and 3, wherein at least one halogen atom is bound to carbon 1 and at least one halogen atom is bound to adjacent carbon 2.

65. (Original) The ink composition of claim 64, wherein the energy active compound is selected from the group consisting of 1,2,5,6,9,10-hexabromocyclododecane, 2,2,2-tribromoethanol, 1,2-dibromocyclohexane, 2,3-tribromopropionitrile, benzylbromoacetate, bromoacetic acid, bromoacetyl bromide, 2-bromobutyric acid, 2-bromopropionic acid, 2,3-dibromopropane-1-ol, ethyl bromoacetate, and 1,1,2,2-tetrabromoethane, and any combination thereof.

66-67. (Canceled)

68. (Original) The ink composition of claim 2, wherein the energy is light, heat, electron beam, or any combination thereof.

69-70. (Canceled).

71. (Previously Presented) The ink composition of claim 2, wherein the volatile organic solvent is selected from the group consisting of alcohols, ketones, cyclic ketones, esters, ethers, and any combination thereof.

72. (Previously Presented) The ink composition of claim 2, wherein the volatile organic solvent is selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, butanol, acetone, methyl ethyl ketone, ethyl acetate, n-propyl acetate, isopropyl acetate, cyclohexanone, and any combination thereof.

73. (Original) The ink composition of claim 6, wherein the binder resin is a thermoplastic resin.

74. (Original) The ink composition of claim 6, wherein the binder resin is selected from the group consisting of amides, urethanes, esters, epoxy resins, ketone resins, vinylpyrrolidone polymers, vinyl polymers, vinylbutyral polymers, acrylics, styrene/acrylics, cellulosics, nitrocellulose, phenolic resins, hydroxystyrene polymers, vinyl alcohol polymers, styrene allyl alcohol polymers, and any combination thereof.

75. (Original) The ink composition of claim 1, wherein the luminescent compound is a luminescent colorant.

76. (Original) The ink composition of claim 1, wherein the luminescent compound is a luminescent colorless compound.

77. (Original) The ink composition of claim 76, further including a binder resin.

78. (Previously Presented) The ink composition of claim 76, wherein the one or more acid species react to alter an absorption characteristic of the luminescent colorless compound.

79. (Previously Presented) The ink composition of claim 76, wherein the one or more acid species react to alter an emission characteristic of the luminescent colorless compound.

80. (Original) The ink composition of claim 79, wherein the emission characteristic is a wavelength of emission.

81. (Original) The ink composition of claim 79, wherein the emission characteristic is an intensity of emission.

82. (Previously Presented) The ink composition of claim 79, wherein the one or more acid species react to decrease the intensity of emission.

83-84. (Canceled)

85. (Original) The ink composition of claim 76, wherein the energy active compound is an onium salt.

86. (Original) The ink composition of claim 85, wherein the onium salt comprises an element from Group V, VI, or VII of the periodic table.

87. (Original) The ink composition of claim 85, wherein the onium salt is selected from the group consisting of diazonium salts, iodonium salts having at least one aryl group, sulfonium salts having at least one aryl group, and any combination thereof.

88. (Previously Presented) The ink composition of claim 76, wherein the energy active compound is a thiophenium salt.

89. (Original) The ink composition of claim 88, wherein the thiophenium salt is arylcarbonylalkyl thiophenium salt.

90. (Original) The ink composition of claim 89, wherein the arylcarbonylalkyl thiophenium salt is selected from the group consisting of S-(2-napthalenecarbonylmethyl)-tetrahydrothiophenium p-toluenesulfonate and S-(2-napthalenecarbonylmethyl)-tetrahydrothiophenium trifluoromethanesulfonate.

91. (Previously Presented) The ink composition of claim 76, wherein the energy active compound is selected from the group consisting of diazomethane compounds, triazine derivatives substituted at one or more of 2, 4, and 6 positions of the triazine ring with MX_3 where X is a halogen atom and M is a carbon atom, and any combination thereof.

92. (Original) The ink composition of claim 91, wherein the triazine derivative is tris[trichloromethyl]s-triazine.

93. (Previously Presented) The ink composition of claim 76, wherein the energy active compound comprises a photoabsorbing fragment and a sulfonate, tosylate or triflate group attached thereto.

94. (Original) The ink composition of claim 93, wherein the energy active compound is selected from the group consisting of N-hydroxynaphthalimide triflates, N-hydroxy-5-norbornene-2,3-dicarboximide sulfonates, N-hydroxyphthalimide triflates, naphthalimidyl sulfonates, succinimidyl sulfonates, and benzoin tosylates.

95. (Previously Presented) The ink composition of claim 76, wherein the energy active compound is a halogenated hydrocarbon comprising (1) at least two carbon atoms designated carbons 1 and 2 where carbon 1 and carbon 2 are bound together and at least two halogen atoms are directly bound to a carbon 1 and carbon 2 is directly bound to cyano, hydroxy, fluoride, chloride, bromide, iodide, phosphonate, or sulfonate; or (2) at least three sequentially adjoined carbon atoms designated 1, 2, and 3, wherein at least one halogen atom is bound to carbon 1 and at least one halogen atom is bound to adjacent carbon 2.

96. (Original) The ink composition of claim 95, wherein the energy active compound is selected from the group consisting of 1,2,5,6,9,10-hexabromocyclododecane, 2,2,2-tribromoethanol, 1,2-dibromocyclohexane, 2,3-tribromopropionitrile, benzylbromoacetate, bromoacetic acid, bromoacetyl bromide, 2-bromobutyric acid, 2-bromopropionic acid, 2,3-dibromopropane-1-ol, ethyl bromoacetate, and 1,1,2,2-tetrabromoethane, and any combination thereof.

97-98. (Canceled)

99. (Original) The ink composition of claim 76, wherein the energy is light, heat, electron beam, or any combination thereof.

100-101. (Canceled)

102. (Previously Presented) The ink composition of claim 99, wherein the volatile organic solvent is selected from the group consisting of alcohols, ketones, cyclic ketones, esters, ethers, and any combinations thereof.

103. (Previously Presented) The ink composition of claim 99, wherein the volatile organic solvent is selected from the group consisting of methanol, ethanol, n-propanol,

isopropanol, butanol, acetone, methyl ethyl ketone, ethyl acetate, n-propyl acetate, isopropyl acetate, cyclohexanone, and any combinations thereof.

104. (Original) The ink composition of claim 1, further including one or more additives selected from the group consisting of humectants, plasticizers, light blockers, surfactants, wetting agents, heat stabilizers, biocides, adhesion promoters, and conductivity agents, and any combination thereof.

105. (Original) The ink composition of claim 2, further including one or more additives selected from the group consisting of humectants, plasticizers, light blockers, surfactants, wetting agents, heat stabilizers, biocides, adhesion promoters, and conductivity agents, and any combination thereof.

106. (Original) The ink composition of claim 1, which has a viscosity of from about 1.6 centipoises (cps) to about 7 cps at 25°C, an electrical resistivity of from about 50 ohm-cm to about 2,000 ohm-cm, and a sonic velocity of from about 1100 meters/second to about 1700 meters/second.

107. (Original) The ink composition of claim 2, which has a viscosity of from about 1.6 centipoises (cps) to about 7 cps at 25°C, an electrical resistivity of from about 50 ohm-cm to about 2,000 ohm-cm, and a sonic velocity of from about 1100 meters/second to about 1700 meters/second.

108. (Original) The ink composition of claim 1, which has a viscosity from about 4 cps to about 120 cps at 25 °C, an electrical resistivity greater than about 3 Kohms-cm, and a surface tension from about 25 to about 38 dynes/cm at 25 °C.

109. (Original) The ink composition of claim 2, which has a viscosity from about 4 cps to about 120 cps at 25 °C, an electrical resistivity greater than about 3 Kohms-cm, and a surface tension from about 25 to about 38 dynes/cm at 25 °C.

110. (Original) The ink composition of claim 1, which has an electrical resistivity greater than about 3 Kohms-cm and a surface tension of from about 25 to about 38 dynes/cm at 25° C.

111. (Original) The ink composition of claim 110, which has a viscosity of from about 3 cps to about 30 cps at a temperature of from 25 to 70 °C.

112. (Original) The ink composition of claim 2, which has an electrical resistivity greater than about 3 Kohms-cm and a surface tension of from about 25 to about 38 dynes/cm at 25° C.

113. (Original) The ink composition of claim 112, which has a viscosity of from about 3 cps to about 30 cps at a temperature of from 25 to 70 °C.

114. (Original) A process for authenticating a substrate comprising: (a) providing an authenticating mark on the substrate using the ink composition of claim 1; (b) reading said authenticating mark; (c) exposing said authenticating mark to an effective amount of energy to generate species that react with said luminescent compound and/or non-luminescent colorant(s) to obtain an energy-exposed authenticating mark; and (d) reading the energy-exposed authenticating mark.

115. (Withdrawn) A process for authenticating a substrate comprising: (a) providing an authenticating mark on the substrate using the ink composition of claim 2; (b) reading said authenticating mark; (c) exposing said authenticating mark to an effective amount of energy to generate species that react with said colorant to obtain an energy-exposed authenticating mark; and (d) reading the energy-exposed authenticating mark.

116. (Original) A process for authenticating a substrate comprising: (a) providing an authenticating mark on the substrate using the ink composition of claim 1; (b) reading said authenticating mark; (c) exposing said authenticating mark to an effective amount of energy to generate species that react with said non-luminescent colorant to obtain an energy-exposed authenticating mark; and (d) reading the energy-exposed authenticating mark.

117. (Original) A system for authenticating a substrate comprising: (a) the ink composition of claim 1; (b) an ink jet printer; (c) a substrate; (d) a deactivation energy source; and (e) a reading device.

118. (Original) A system for authenticating a substrate comprising: (a) the ink composition of claim 2; (b) an ink jet printer; (c) a substrate; (d) a deactivation energy source; and (e) a reading device.

119. (Canceled).

120. (Original) An ink jet ink composition comprising a first colorant which is fluorescent, a second colorant which is pH sensitive, a solvent, a binder resin, and a photoactive acid-releasing compound.

121. (Canceled).

122. (Original) The ink composition of claim 6, wherein the colorant is a fluorescent colorant and the energy active compound is a photoactive acid-releasing compound.

123. (Previously Presented) The ink composition of claim 3, wherein the luminescent colorant is selected from the group consisting of anthracene, furan, thiophene, nitrobenzene, cyanines, xanthenes, acridines, phenazines, napthols, porphyrins, coumarins, pyrromethenes, and oxazines, and any combination thereof.

124. (Original) The ink composition of claim 123, wherein the xanthene is fluorescein or rhodamine.

125. (Original) The ink composition of claim 123, wherein the acridine is euchrysine.

126. (Original) The ink composition of claim 123, wherein the phenazine is safranine.

127. (Original) The ink composition of claim 1, wherein the luminescent compound is a dye.

128. (Original) The ink composition of claim 127, wherein the dye is selected from the group consisting of C.I. Solvent Red 49, fluorescent metal complex azo dyes, and fluorescent azo dyes, and any combination thereof.

129. (Original) The ink composition of claim 128, wherein the fluorescent metal complex azo dye is aluminum:acid Alizarin Garnet R.

130. (Original) The ink composition of claim 128, wherein the fluorescent azo dye is 4-dimethylamino-N-benzylidene-4'-nitroaniline.

131. (Original) The ink composition of claim 1, wherein the luminescent compound is a rare earth metal chelate complex.

132. (Original) The ink composition of claim 131, wherein the rare earth metal is a lanthanide.

133. (Original) The ink composition of claim 132, wherein the rare earth metal is Eu.

134. (Previously Presented) The ink composition of claim 1, which includes one or more non-luminescent colorants, wherein the acid species react to alter the absorption or emission characteristic of a non-luminescent colorant such that the altered absorption or emission characteristic of the non-luminescent colorant overlaps or coincides with the absorption or emission characteristic of the luminescent compound.

135. (Original) The ink composition of claim 1, which includes an additional non-luminescent colorant to provide a visible color or to alter a luminescent property of the luminescent compound.

136. (Original) The ink composition of claim 135, wherein the additional non-luminescent colorant is titanium dioxide.

137. (Previously Presented) The ink composition of claim 1, which includes one or more non-luminescent colorants, wherein at least one of the non-luminescent colorants is one that changes color if the pH of its environment is changed.

138. (Original) The ink composition of claim 137, wherein the at least one of the non-luminescent colorants exhibits a color change under acidic conditions.

139. (Original) The ink composition of claim 137, wherein the at least one of the non-luminescent colorants is a triarylmethane dye, a xanthene dye, or an azo dye.

140. (Original) The ink composition of claim 139, wherein the triarylmethane dye is C.I. Basic Violet 4.

141. (Original) The ink composition of claim 139, wherein the xanthene dye is C.I. Solvent Red 49.

142. (Original) The ink composition of claim 139, wherein the azo dye is C.I. Solvent Orange 3.

143. (Original) The ink composition of claim 137, wherein the at least one of the non-luminescent colorants is selected from the group consisting of anthraquinones,

diphenylmethanes, thiazines, oxazines, azines, pyronines, thiopyronines, acridines, polymethine, indigoid, nitro, and nitroso dyes, and any combination thereof.

144. (Previously Presented) The ink composition of claim 1, wherein the energy active compound is a photoinitiator.

145. (Previously Presented) The ink composition of claim 2, wherein the energy active compound is a photoinitiator.

146. (Previously Presented) The ink composition of claim 5, which contains the volatile organic solvent in an amount of from about 30 to about 95% by weight, the binder resin in an amount of from 0.01 to about 30% by weight, the luminescent compound in an amount of from about 0.01 to about 10% by weight, a non-luminescent colorant in an amount of from 0 to about 10% by weight, and the energy active compound in an amount of from about 0.1% to about 15% by weight.

147. (Canceled)

148. (Previously Presented) The ink composition of claim 146, wherein the volatile organic solvent is acetone.

149. (Original) The ink composition of claim 146, wherein the binder resin is a polyketone resin.

150. (Original) The ink composition of claim 146, wherein the luminescent compound is a phosphorescent dye comprising europium.

151. (Original) The ink composition of claim 146, wherein the non-luminescent colorant is an azo dye.

152. (Original) The ink composition of claim 151, wherein the azo dye is chrysolidine Y base.

153. (Original) The ink composition of claim 146, wherein the energy active compound is reactive toward UVC radiation and is soluble in the solvent.

154. (Original) The ink composition of claim 146, wherein the energy active compound is tribromoethanol.

155. (Original) The ink composition of claim 146, which further includes a conductivity agent in an amount of from about 0.5 to about 5% by weight of the ink composition.

156. (Original) The ink composition of claim 155, wherein the conductivity agent is tetrapropylammonium bromide.

157. (Original) The ink composition of claim 19, wherein the luminescent compound is a europium metal chelate complex and the non-luminescent colorant is Solvent Yellow 56.

158. (Previously Presented) An ink composition comprising a colorant, a solvent, and a photoinitiator, said photoinitiator, when exposed to an effective amount of energy, generates one or more acid species that react to alter a characteristic of the colorant, wherein the ink composition is an ink jet ink composition.

159. (Previously Presented) An ink composition comprising a colorant, a solvent, and an energy active compound, said energy active compound, when exposed to an effective amount of energy, generates one or more acid species that react to alter an intensity of absorption of the colorant, wherein the ink composition is an ink jet ink composition.

160. (Previously Presented) An ink composition comprising a luminescent colorant, a solvent, and an energy active compound, said an energy active compound, when exposed to an effective amount of energy, generates one or more acid species that react to alter a characteristic of the luminescent colorant, wherein the ink composition is an ink jet ink composition, and the luminescent colorant emits in the IR region.

161. (Currently Amended) The ink composition of claim 160, wherein the luminescent colorant is selected from the group consisting of ~~anthracene, furan, thiophene, nitrobenzene,~~ cyanines, ~~xanthenes, acridines, phenazines, napthols,~~ porphyrins, ~~coumarins, pyrromethenes,~~ and oxazines, and any combination thereof.